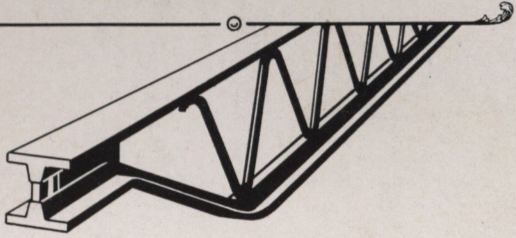
A. I. A. File Number 13g

TRUSCON STEEL JOISTS

O-T

OPEN TRUSS TYPE



for

ECONOMICAL AND
FIREPROOF FLOOR
CONSTRUCTION

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO
WAREHOUSES AND OFFICES IN ALL PRINCIPAL CITIES

A. I. A. File Number 13g

35 FLOORS OF TRUSCON O-T [OPEN TRUSS] TYPE STEEL JOIST CONSTRUCTION

Now! under Construction.

GRANT BUILDING, PITTSBURGH, PA.
HENRY HORNBOSTEL, *Architect*
THOMPSON-STARRETT CO. *Contractors*
M. NEUMANN, *Structural Engineer*

TRUSCON STEEL COMPANY ~ YOUNGSTOWN ~ OHIO

1903
TWENTY-FIVE YEARS OF
PIONEERING AND LEADERSHIP
1928

For Economical and Fireproof Floors

THE superiority of steel joist construction for economical and fireproof floors is especially well exemplified in Truscon O-T (Open Truss) Steel Joists. Their design is based on the best engineering practice and includes many distinctive features.

The top and bottom chords of the Warren truss are wide "tee-shaped" members providing the greatest resistance to buckling strains. The bottom "tee" is continuous to the bearings, where it is welded with web plate and top chord to form a solid I-Beam. The web members are continuous from end to end to positively transmit the stresses. The welding of all joints is done under a method of high pressure electric welding making the most positive connections.

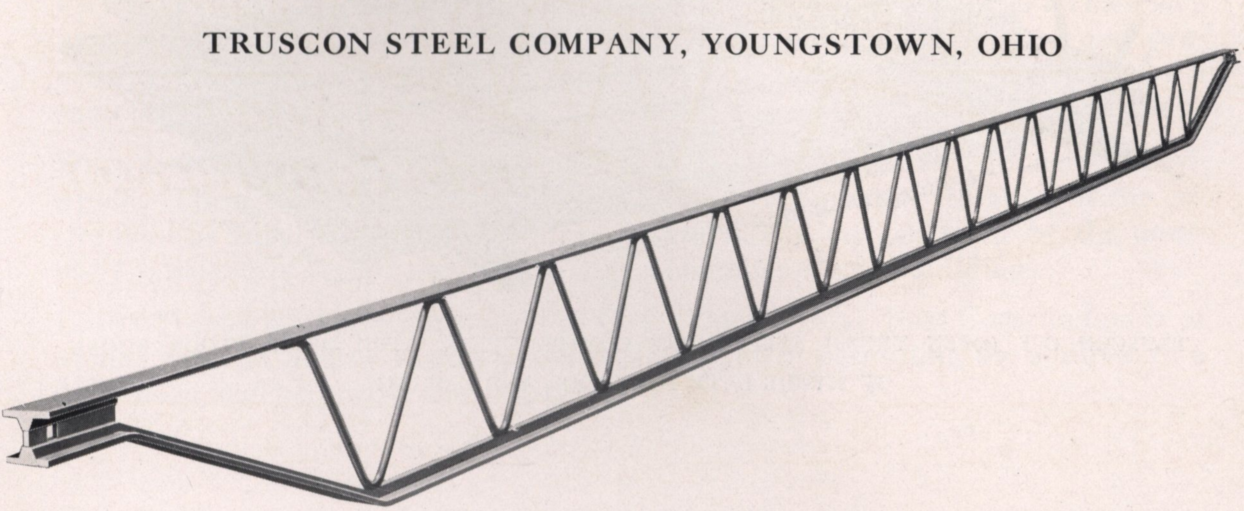
The entire design is not only unusually efficient but is exceptionally economical of materials. Truscon O-T (Open Truss) Steel Joists are manufactured of the highest grade open hearth steel in accordance with Truscon standards of quality workmanship.

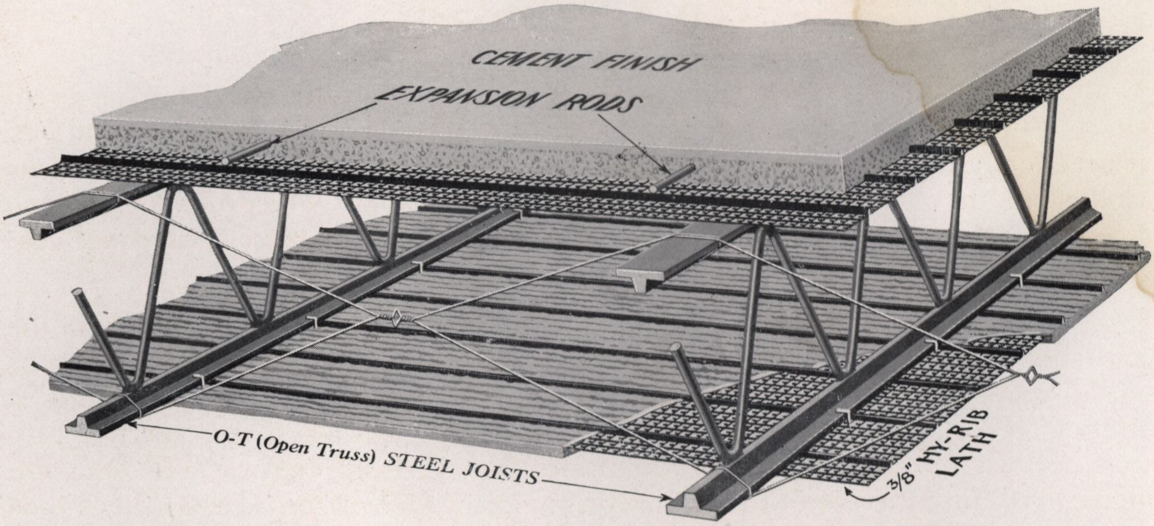
In practical use Truscon O-T (Open Truss) Steel Joists are extremely simple to install, insuring utmost speed of erection. The under-slung design of the bearing permits maximum head-room under the supporting girders. The open web allows the passage of pipes and conduits of any number and in any direction.

Truscon O-T (Open Truss) Steel Joists are completely shop fabricated and reach the job ready for placing. Each Joist is marked to correspond with the erection diagram, thus greatly simplifying and speeding construction work.

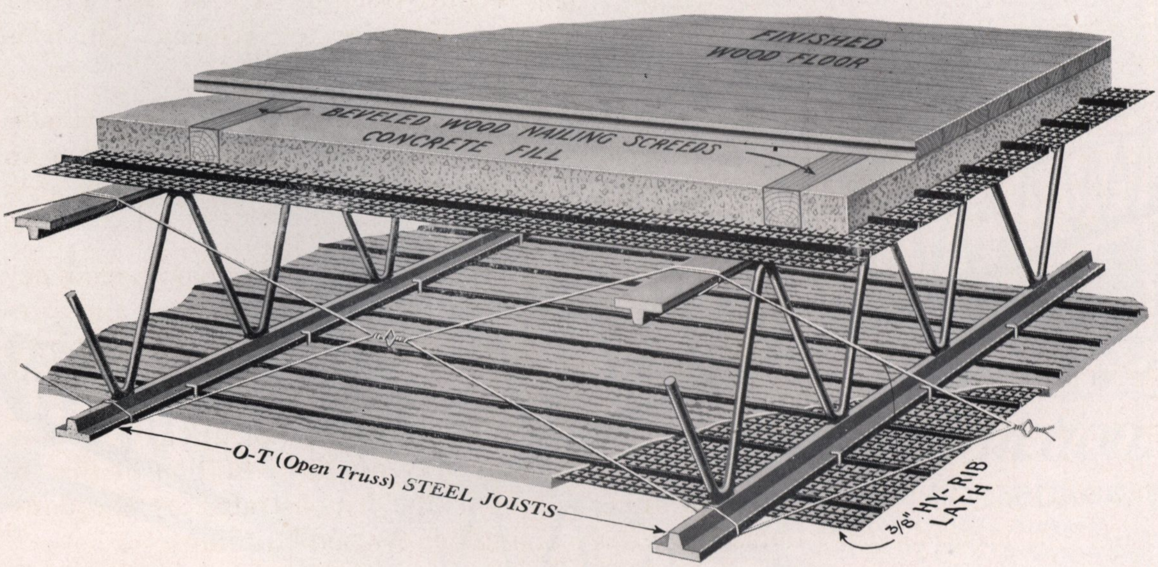
Thorough tests under extreme loadings have demonstrated their all-around dependability.

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO





TRUSCON O-T (OPEN TRUSS) STEEL JOIST CONSTRUCTION WITH CEMENT FLOOR FINISH
3/8" HY-RIB LATH FOR FLOOR AND CEILING



TRUSCON O-T (OPEN TRUSS) STEEL JOIST CONSTRUCTION WITH WOOD FLOOR FINISH
3/8" HY-RIB LATH FOR FLOOR AND CEILING

Advantages of O-T (*Open Truss*) Steel Joist Design

ADAPTABILITY—O-T (Open Truss) Steel Joists are used with equal facility in all kinds of buildings, regardless of their location. They are used in small buildings, at practically the same cost per square foot as in the large ones, having the same economy in the first floor of a residence as in a sky-scraper. Fireproof construction is thus made available in thousands of places where other systems of fireproof construction are not practical.

ECONOMY—The economy of O-T (Open Truss) Steel Joists occurs not only in the construction itself but in the savings that their light weight effects throughout the building in the supporting framework and foundations, and in the advantages it offers to other contractors working in the same building. Its speedy erection protects the original investment and minimizes the overhead expense. In the completed building, the durability and permanence of O-T (Open Truss) Steel Joist Construction save in insurance costs and maintenance expense.

SPEED OF ERECTION—The erection of O-T (Open Truss) Steel Joists is very rapid, because all units are shop-fabricated and reach the job ready for placing with a minimum amount of field labor. Being self-sustaining, any number of floors can be constructed at one time. No centering or false work is required. No special equipment is needed.

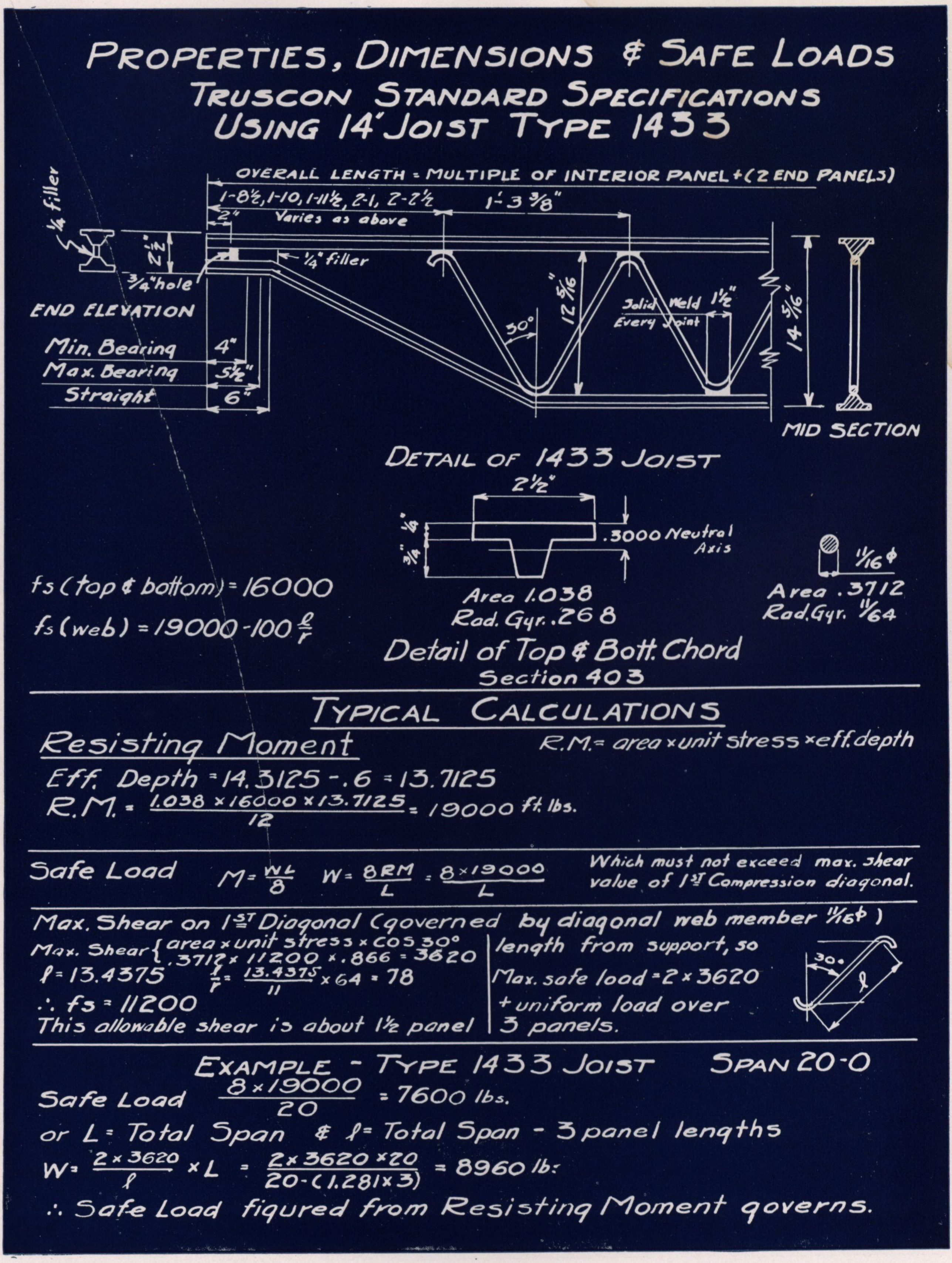
ALL WEATHER BUILDING—The construction is installed as readily in winter as in summer. Unlike many other fireproof construction systems, O-T (Open Truss) Steel Joist Construction is not dependent upon the setting of cement, which is seriously retarded by cold weather.

FIREPROOFNESS—Ample strength is available up to maximum temperatures with no tendency to twist or distort. Fire tests prove that 7/8″ of cement or gypsum ceiling plaster protects O-T (Open Truss) Steel Joist Construction against high temperatures.

CRACKPROOFNESS—Truscon O-T (Open Truss) Joist Construction has no tendency to shrink, swell or warp. Metal Lath thoroughly reinforces the plaster and prevents its cracking. The saving in cost of redecoration and in expense for repairs is substantial.

SOUNDPROOFNESS--O-T (Open Truss) Joist Construction is exceptionally soundproof. The extreme rigidity of the construction prevents the vibration of the entire floor as a body. Its soundproofness is practically demonstrated by the unusually satisfactory results obtained in a great number of good buildings.

LIGHT WEIGHT—The light weight of O-T (Open Truss) Joist Construction is of utmost value in adding stories to old buildings, often permitting the addition of a floor more than originally contemplated.



PROPERTIES, DIMENSIONS & SAFE LOADS

TRUSCON STANDARD SPECIFICATIONS USING 14" JOIST TYPE 1433

Area 1.038
Rad. Gyr. .268

Area .3712
Rad. Gyr. 11/64

f_s (top & bottom) = 16000

f_s (web) = $19000 - 100\frac{\ell}{r}$

Detail of Top & Bott. Chord
Section 403

TYPICAL CALCULATIONS

Resisting Moment

R.M. = area × unit stress × eff. depth

Eff. Depth = 14.3125 − .6 = 13.7125

$$R.M. = \frac{1.038 \times 16000 \times 13.7125}{12} = 19000 \text{ ft. lbs.}$$

Safe Load $M = \frac{WL}{8}$ $W = \frac{8RM}{L} = \frac{8 \times 19000}{L}$ Which must not exceed max. shear value of 1st Compression diagonal.

Max. Shear on 1st Diagonal (governed by diagonal web member 11/16 ϕ)

Max. Shear $\left\{ \begin{array}{l} \text{area} \times \text{unit stress} \times \cos 30° \\ .3712 \times 11200 \times .866 = 3620 \end{array} \right.$

$\ell = 13.4375$ $\frac{\ell}{r} = \frac{13.4375}{11} \times 64 = 78$

$\therefore f_s = 11200$

This allowable shear is about 1½ panel length from support, so Max. safe load = 2 × 3620 + uniform load over 3 panels.

EXAMPLE – TYPE 1433 JOIST SPAN 20-0

Safe Load $\frac{8 \times 19000}{20} = 7600$ lbs.

or L = Total Span & ℓ = Total Span − 3 panel lengths

$$W = \frac{2 \times 3620}{\ell} \times L = \frac{2 \times 3620 \times 20}{20 - (1.281 \times 3)} = 8960 \text{ lbs.}$$

∴ Safe Load figured from Resisting Moment governs.

TABLE No. 1

TOTAL SAFE LOADS

IN POUNDS PER SQUARE FOOT UNIFORMLY DISTRIBUTED

Designed in Accordance with

TRUSCON STEEL COMPANY'S SPECIFICATIONS

Using Maximum Stresses of 16,000 Pounds per Square Inch

Joist Type	Clear Span	Total Safe Load	TOTAL SAFE LOAD PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS												
			12″	13″	14″	15″	16″	17″	18″	19″	20″	21″	22″	23″	24″
800	8′-0″	4380	548	507	470	439	412	388	365	347	329	313	299	287	276
	8′-6″	4250	502	474	430	402	376	354	334	316	301	286	274	262	251
	9′-0″	4200	467	432	400	374	350	329	312	294	280	267	255	243	234
	9′-6″	4130	435	402	373	348	326	307	290	274	261	249	236	227	218
	10′-0″	4070	407	376	349	325	305	287	271	257	244	232	222	212	204
	10′-6″	4000	380	351	326	304	285	268	254	240	228	217	207	198	190
	11′-0″	3950	359	331	307	286	268	253	238	228	215	205	195	187	179
	11′-6″	3910	340	314	292	272	255	240	227	215	204	194	185	177	170
	12′-0″	3880	323	298	277	258	242	227	215	204	193	184	176	168	161
	12′-6″	3780	302	279	259	242	226	213	202	192	182	173	165	158	151
	13′-0″	3640	280	258	249	223	210	196	186	177	168	159	152	145	140
	13′-6″	3500	259	240	221	208	195	182	173	164	155	148	141	135	130
	14′-0″	3380	241	223	206	193	181	170	161	153	144	138	132	125	120
	14′-6″	3270	226	210	195	182	170	160	151	144	136	130	124	118	114
	15′-0″	3160	210	194	180	168	157	148	140	133	126	120	115	109	105
	15′-6″	3060	198	182	168	157	148	138	131	124	118	112	107	102	99
	16′-0″	2960	185	171	158	148	138	130	123	117	110	105	101	96	92
1000	10′-0″	5330	533	492	457	427	400	376	355	337	320	305	291	278	267
	10′-6″	5230	500	462	428	400	375	353	334	316	300	286	273	261	250
	11′-0″	5130	467	430	400	374	350	329	312	294	280	267	255	243	234
	11′-6″	5060	440	407	378	352	330	311	294	278	264	251	240	230	220
	12′-0″	4980	416	384	356	333	312	294	278	263	250	238	227	217	208
	12′-6″	4780	383	354	328	306	287	270	256	242	230	219	209	200	192
	13′-0″	4600	354	327	304	283	266	250	236	224	212	202	193	185	177
	13′-6″	4420	327	304	280	262	247	231	219	208	197	187	179	171	164
	14′-0″	4270	305	283	262	245	230	216	204	194	183	175	167	159	153
	14′-6″	4120	284	262	242	227	213	199	189	179	169	162	155	148	142
	15′-0″	3980	265	245	226	212	199	187	177	168	159	151	145	138	133
	15′-6″	3860	248	230	213	199	187	176	166	158	149	142	136	130	124
	16′-0″	3740	234	216	201	187	175	164	156	148	140	134	127	121	117
	16′-6″	3620	219	202	186	174	164	153	145	138	130	125	119	114	109
	17′-0″	3520	207	192	177	166	156	147	138	131	124	119	113	108	104
	17′-6″	3410	195	181	167	156	146	137	130	123	117	111	107	102	98
	18′-0″	3320	184	170	157	147	138	129	123	116	110	105	100	96	92
1011	10′-0″	5330	533	492	457	427	400	376	355	337	320	305	291	278	267
	10′-6″	5230	497	462	428	400	375	353	334	316	300	286	273	261	250
	11′-0″	5130	467	430	400	374	350	329	312	294	280	267	255	243	234
	11′-6″	5060	440	407	378	352	330	311	294	278	264	251	240	230	220
	12′-0″	5000	416	384	356	333	312	294	278	263	250	238	227	217	208
	12′-6″	4940	395	364	338	316	296	279	264	250	237	226	215	206	198
	13′-0″	4880	376	347	322	301	282	266	250	238	225	215	205	196	188
	13′-6″	4830	358	331	307	286	268	253	238	228	215	205	195	187	179
	14′-0″	4780	342	316	293	274	256	242	228	216	205	196	186	178	171
	14′-6″	4740	326	304	280	262	247	231	219	208	197	187	179	171	163
	15′-0″	4700	314	290	269	251	235	222	209	198	188	179	171	164	157
	15′-6″	4660	300	278	257	240	226	212	200	190	180	172	164	156	150
	16′-0″	4640	290	268	247	231	217	204	193	183	173	165	158	151	145
	16′-6″	4600	279	258	239	223	210	196	186	177	168	159	152	145	140

TABLE No. 1—*Continued*

Joist Type	Clear Span	Total Safe Load	TOTAL SAFE LOAD PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS												
			12″	13″	14″	15″	16″	17″	18″	19″	20″	21″	22″	23″	24″
1011	17′-0″	4570	268	248	230	214	201	189	179	169	161	153	146	140	134
	17′-6″	4550	260	240	221	208	195	182	173	164	155	148	141	135	130
	18′-0″	4520	251	232	215	201	189	177	167	159	150	143	137	131	126
	18′-6″	4450	240	223	206	193	181	170	161	153	144	138	132	125	120
	19′-0″	4330	228	211	195	182	171	160	152	144	136	130	124	119	114
	19′-6″	4230	217	202	186	174	164	154	145	138	131	125	119	114	109
	20′-0″	4120	206	190	176	165	154	145	137	130	123	118	112	107	103
1200	12′-0″	4380	366	339	314	293	275	259	245	232	220	210	200	191	183
	12′-6″	4320	345	320	295	276	259	243	230	218	207	196	189	180	173
	13′-0″	4260	328	304	280	262	247	231	219	208	197	187	179	171	164
	13′-6″	4220	312	289	267	250	235	220	208	198	187	178	171	163	156
	14′-0″	4150	296	274	253	237	222	208	197	187	177	169	162	154	148
	14′-6″	4120	284	262	242	227	213	199	189	179	169	162	155	148	142
	15′-0″	4060	271	250	232	217	204	191	181	171	162	155	148	141	136
	15′-6″	4040	260	240	221	208	195	182	173	164	155	148	141	135	130
	16′-0″	3980	249	230	213	199	187	176	166	158	149	142	136	130	124
	16′-6″	3960	240	223	206	193	181	170	161	153	144	138	132	125	120
	17′-0″	3920	230	211	196	184	172	162	153	145	137	131	125	119	115
	17′-6″	3900	223	208	192	180	169	158	150	142	135	128	123	117	112
	18′-0″	3860	214	198	183	171	161	151	143	135	128	122	117	111	107
	18′-6″	3840	207	192	177	166	156	147	138	131	124	119	113	108	104
	19′-0″	3800	200	185	171	160	150	141	133	127	120	114	109	104	100
	19′-6″	3700	190	176	162	152	143	134	127	120	114	109	104	99	95
	20′-0″	3610	180	166	154	144	135	127	120	114	108	103	98	94	90
	20′-6″	3530	173	161	149	139	131	123	116	110	104	100	95	91	87
	21′-0″	3440	164	151	141	132	123	116	110	104	99	94	90	86	82
	21′-6″	3360	156	144	134	125	117	111	104	98	94	89	85	82	78
	22′-0″	3280	149	137	128	119	112	105	99	94	89	85	81	78	75
	22′-6″	3210	143	132	123	114	107	102	95	90	86	82	78	75	72
	23′-0″	3140	136	125	117	109	102	96	91	86	82	77	74	71	68
1211	12′-0″	6300	525	485	450	420	394	370	350	332	315	300	286	274	263
	12′-6″	6200	497	458	426	397	372	351	331	314	298	284	271	259	249
	13′-0″	6100	470	434	404	376	352	332	314	296	282	269	256	245	235
	13′-6″	6050	447	413	383	358	334	316	298	282	268	255	244	233	224
	14′-0″	5950	425	392	364	340	318	300	284	268	255	243	232	222	213
	14′-6″	5920	408	376	349	325	305	287	271	257	244	232	222	212	204
	15′-0″	5830	389	360	334	311	292	275	259	246	236	225	214	203	194
	15′-6″	5780	374	345	321	300	280	264	250	236	224	214	204	195	187
	16′-0″	5730	358	331	307	286	268	253	238	228	215	205	195	187	179
	16′-6″	5670	342	316	293	274	256	242	228	216	205	196	186	178	171
	17′-0″	5630	330	305	261	264	248	233	220	208	198	188	180	172	165
	17′-6″	5600	320	296	254	256	240	226	213	202	192	183	174	167	160
	18′-0″	5470	304	283	261	244	229	215	204	193	183	174	167	159	152
	18′-6″	5320	287	265	244	229	215	201	191	181	171	163	156	149	143
	19′-0″	5180	272	252	234	218	205	193	181	172	164	155	149	142	136
	19′-6″	5050	259	240	221	208	195	182	173	164	155	148	141	135	130
	20′-0″	4920	245	228	210	197	185	173	164	156	147	140	134	128	123
	20′-6″	4800	234	218	201	188	177	166	157	149	141	134	128	123	117
	21′-0″	4690	223	207	191	179	168	158	149	141	134	128	122	116	112
	21′-6″	4570	211	195	180	168	158	148	140	133	126	120	115	109	105
	22′-0″	4470	203	188	174	163	153	143	136	129	122	116	111	106	102
	22′-6″	4380	195	179	166	155	146	137	129	123	116	111	106	101	97
	23′-0″	4280	187	174	161	150	141	132	125	119	113	107	103	98	94
	23′-6″	4180	178	164	151	142	133	125	118	112	106	101	97	92	89
	24′-0″	4100	171	157	145	136	128	120	113	108	102	97	93	89	85

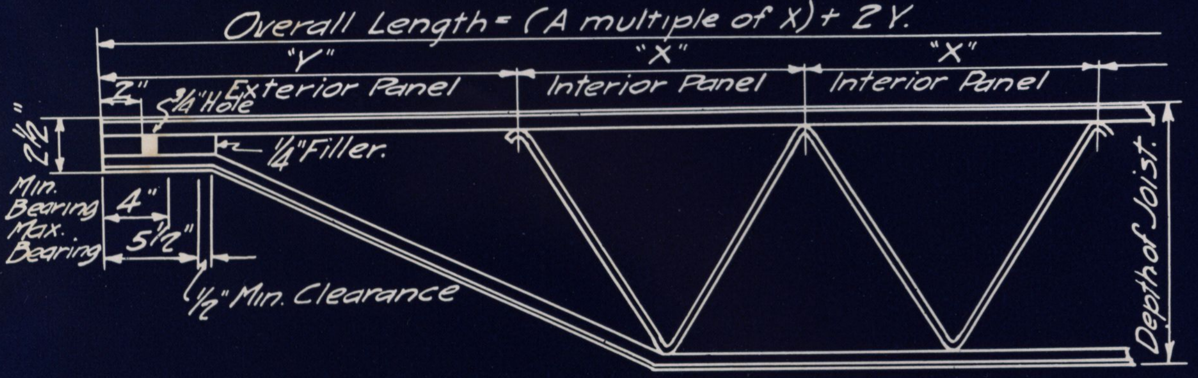
TABLE No. 1—*Continued*

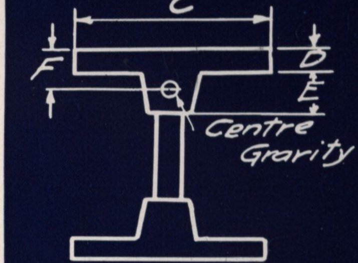
Joist Type	Clear Span	Total Safe Load	TOTAL SAFE LOAD PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS												
			12″	13″	14″	15″	16″	17″	18″	19″	20″	21″	22″	23″	24″
1411	14′–0″	7500	535	495	458	428	402	378	356	338	320	306	292	281	268
	14′–6″	7370	508	470	437	407	382	359	339	321	305	291	277	258	254
	15′–0″	7300	487	448	417	390	365	344	324	283	292	278	265	256	244
	15′–6″	7200	465	430	400	372	349	328	310	294	279	266	254	243	233
	16′–0″	7040	440	407	378	352	330	311	294	278	264	251	240	230	220
	16′–6″	6830	413	382	355	330	310	292	276	261	248	237	225	216	207
	17′–0″	6630	390	360	334	312	292	275	260	246	234	223	213	204	195
	17′–6″	6440	368	340	316	294	276	260	245	232	221	210	200	192	184
	18′–0″	6260	348	322	298	278	261	247	232	220	209	198	190	182	174
	18′–6″	6100	330	305	261	264	248	233	220	208	198	188	180	172	165
	19′–0″	5930	312	289	267	250	235	220	208	198	187	178	171	163	156
	19′–6″	5780	297	274	253	236	222	208	197	187	177	169	162	154	148
	20′–0″	5640	282	261	241	226	212	199	188	179	169	162	154	147	141
	20′–6″	5500	268	247	229	214	201	188	178	169	160	153	146	139	134
	21′–0″	5360	255	234	218	204	191	179	170	161	152	145	139	132	127
	21′–6″	5250	244	226	210	196	184	173	163	155	147	140	134	128	122
	22′–0″	5120	232	214	198	185	174	163	154	146	138	132	126	120	117
	22′–6″	5010	222	204	189	177	166	156	147	140	132	126	121	115	111
	23′–0″	4900	213	196	183	170	159	149	141	134	127	121	116	110	106
	23′–6″	4790	204	189	174	163	153	144	136	129	122	117	111	106	102
	24′–0″	4700	196	181	168	157	147	138	131	124	117	112	107	102	98
	24′–6″	4600	188	173	160	150	141	132	125	118	112	107	102	97	94
	25′–0″	4510	180	168	155	145	136	128	121	115	109	104	100	94	90
	25′–6″	4420	173	161	149	139	131	123	116	110	104	100	95	91	87
	26′–0″	4340	167	154	142	133	125	117	111	106	100	95	91	87	84
	26′–6″	4250	160	148	137	128	120	113	107	101	96	91	87	83	80
	27′–0″	4180	155	144	133	125	117	110	104	99	93	89	85	81	78
1433	14′–0″	10000	715	660	613	572	535	505	477	452	428	408	390	373	358
	14′–6″	9900	683	630	585	546	512	482	455	432	410	396	372	357	342
	15′–0″	9750	650	600	557	520	487	458	433	410	390	372	354	339	325
	15′–6″	9630	620	572	532	495	465	438	414	392	372	354	338	324	310
	16′–0″	9500	595	550	510	476	445	420	396	376	357	340	325	310	298
	16′–6″	9220	558	516	478	447	418	394	372	353	335	319	304	292	279
	17′–0″	8940	526	485	450	420	394	370	350	332	315	300	286	274	263
	17′–6″	8700	497	458	426	397	372	351	331	314	298	284	271	259	249
	18′–0″	8450	468	432	400	374	350	329	312	294	280	267	255	243	234
	18′–6″	8220	444	410	381	355	333	314	296	280	266	254	242	232	222
	19′–0″	8000	420	380	360	336	315	396	280	265	252	240	229	219	210
	19′–6″	7800	400	370	343	320	300	282	266	253	240	228	218	209	200
	20′–0″	7600	380	351	326	304	285	268	254	240	228	217	207	198	190
	20′–6″	7420	362	334	310	290	272	256	242	228	217	207	197	189	181
	21′–0″	7240	344	320	295	276	259	243	230	218	207	196	189	180	174
	21′–6″	7070	328	304	280	262	247	231	219	208	197	187	179	171	164
	22′-0″	6920	314	291	268	251	236	221	209	199	188	179	171	163	157
	22′–6″	6760	300	278	257	240	226	212	200	190	180	172	164	156	150
	23′–0″	6600	287	267	246	231	216	203	192	182	173	165	157	150	144
	23′–6″	6470	275	256	236	221	208	194	184	175	165	158	151	144	138
	24′–0″	6340	264	242	225	210	197	186	175	166	158	150	143	137	132
	24′–6″	6200	253	234	218	204	191	179	170	161	152	145	139	132	127
	25′–0″	6080	244	226	209	196	183	172	163	155	146	140	133	127	122
	25′–6″	5960	234	216	201	187	175	164	156	148	140	134	127	121	117
	26′–0″	5850	225	209	193	181	169	159	150	143	135	129	123	118	113
	26′–6″	5740	216	200	185	173	162	152	144	137	129	124	118	113	108
	27′–0″	5630	208	192	177	166	156	147	138	131	124	119	113	108	104
	27′–6″	5530	202	186	173	161	151	142	134	127	121	115	110	105	101
	28′–0″	5430	194	179	166	155	146	137	129	123	116	111	106	101	97

TABLE No. 1—*Continued*

Joist Type	Clear Span	Total Safe Load	TOTAL SAFE LOAD PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS												
			12″	13″	14″	15″	16″	17″	18″	19″	20″	21″	22″	23″	24″
1611	16′-0″	8050	502	474	430	402	376	354	334	316	301	286	274	262	251
	16′-6″	7800	472	435	404	377	354	333	314	297	283	269	257	246	236
	17′-0″	7580	446	413	383	358	334	316	298	282	268	255	244	233	224
	17′-6″	7370	420	388	360	336	315	296	280	265	252	240	229	219	210
	18′-0″	7160	398	368	341	318	298	281	265	251	239	227	217	207	199
	18′-6″	6960	376	347	322	301	282	266	250	238	225	215	205	196	188
	19′-0″	6780	356	328	305	285	266	251	237	225	214	204	194	186	178
	19′-6″	6600	338	312	289	270	253	239	225	213	203	193	184	176	169
	20′-0″	6450	322	298	277	258	242	227	215	204	193	184	176	168	161
	20′-6″	6300	308	284	264	247	231	218	205	195	185	176	168	161	154
	21′-0″	6140	292	271	252	234	220	206	195	186	176	168	160	153	146
	21′-6″	6000	279	258	249	223	210	196	186	177	168	159	152	145	140
	22′-0″	5850	266	245	226	212	199	187	177	168	159	151	145	138	133
	22′-6″	5730	254	234	218	204	191	179	170	161	152	145	139	132	127
	23′-0″	5600	244	226	210	196	184	173	163	155	147	140	134	128	122
	23′-6″	5480	234	216	201	187	175	164	156	148	140	134	127	121	117
	24′-0″	5370	224	207	191	179	168	158	149	141	134	128	122	116	112
	24′-6″	5260	214	198	183	171	161	151	143	135	128	122	117	111	107
	25′-0″	5150	206	192	177	166	156	147	138	131	124	119	113	108	103
	25′-6″	5050	198	182	168	157	148	138	131	124	118	112	107	102	99
	26′-0″	4960	190	176	162	152	143	134	127	120	114	109	104	99	95
	26′-6″	4870	183	169	157	146	137	129	122	116	110	105	100	95	92
	27′-0″	4770	177	164	151	142	133	125	118	112	106	101	97	92	89
	27′-6″	4690	170	157	145	136	128	120	113	108	102	97	93	89	85
	28′-0″	4600	164	151	141	132	123	116	110	104	99	94	90	86	82
	28′-6″	4520	158	146	135	126	119	111	105	100	95	90	86	82	79
	29′-0″	4450	153	143	132	123	116	108	103	98	92	88	84	80	77
	29′-6″	4370	148	136	126	118	111	104	98	93	88	84	80	77	74
	30′-0″	4300	143	133	123	115	108	101	96	91	86	82	79	75	72
1633	16′-0″	10830	680	627	583	544	516	480	454	430	407	388	371	356	346
	16′-6″	10500	636	587	547	508	477	450	424	402	382	364	346	332	318
	17′-0″	10200	600	555	515	480	450	424	400	379	360	343	327	313	300
	17′-6″	9920	565	522	485	453	424	398	376	357	339	322	308	295	283
	18′-0″	9650	535	495	458	428	402	378	356	338	320	306	292	281	268
	18′-6″	9370	506	476	434	405	379	358	337	320	304	289	276	264	253
	19′-0″	9140	480	444	412	384	360	339	320	303	288	274	262	250	240
	19′-6″	8900	456	422	391	365	342	322	304	288	273	261	249	238	228
	20′-0″	8670	434	402	372	347	325	307	289	274	260	248	236	226	217
	20′-6″	8470	414	382	355	330	310	292	276	261	248	237	225	216	207
	21′-0″	8260	394	364	338	316	296	278	263	249	236	225	214	206	197
	21′-6″	8070	376	347	322	301	282	266	250	238	225	215	205	196	188
	22′-0″	7880	358	331	307	286	268	253	238	228	215	205	195	187	179
	22′-6″	7720	343	316	293	274	256	242	228	216	205	196	186	178	171
	23′-0″	7550	328	304	280	262	247	231	219	208	197	187	179	171	164
	23′-6″	7380	314	290	269	251	235	222	209	198	188	179	171	164	157
	24′-0″	7230	300	278	257	240	226	212	200	190	180	172	164	156	150
	24′-6″	7070	288	267	246	231	216	203	192	182	173	165	157	150	144
	25′-0″	6940	278	258	249	223	210	196	186	177	168	159	152	145	139
	25′-6″	6800	266	245	226	212	199	187	177	168	159	151	145	138	133
	26′-0″	6680	257	237	220	206	193	181	172	162	154	147	140	134	129
	26′-6″	6550	246	227	210	196	184	172	163	155	147	140	134	128	123
	27′-0″	6420	238	221	204	191	180	168	159	151	143	137	131	125	119
	27′-6″	6320	230	214	198	185	174	163	154	146	138	132	125	119	115
	28′-0″	6200	222	206	191	178	167	157	148	141	133	127	121	116	111
	28′-6″	6100	214	198	183	171	161	151	143	136	128	122	117	112	107
	29′-0″	5980	206	191	176	165	155	145	138	131	123	118	113	108	103
	29′-6″	5880	200	185	171	160	150	141	133	127	120	114	109	104	100
	30′-0″	5780	193	177	164	153	144	136	128	121	115	110	105	100	96
	30′-6″	5700	187	173	160	150	141	132	125	118	112	107	102	97	94
	31′-0″	5600	180	168	155	145	136	128	121	115	109	104	100	94	91
	31′-6″	5500	175	162	149	140	132	123	117	111	103	100	96	91	88
	32′-0″	5430	170	157	145	136	128	120	113	108	102	97	93	89	85

O-T (OPEN TRUSS) STEEL JOIST DETAILS





Section thru end of O-T Steel Joist.

PROPERTIES OF FLANGES

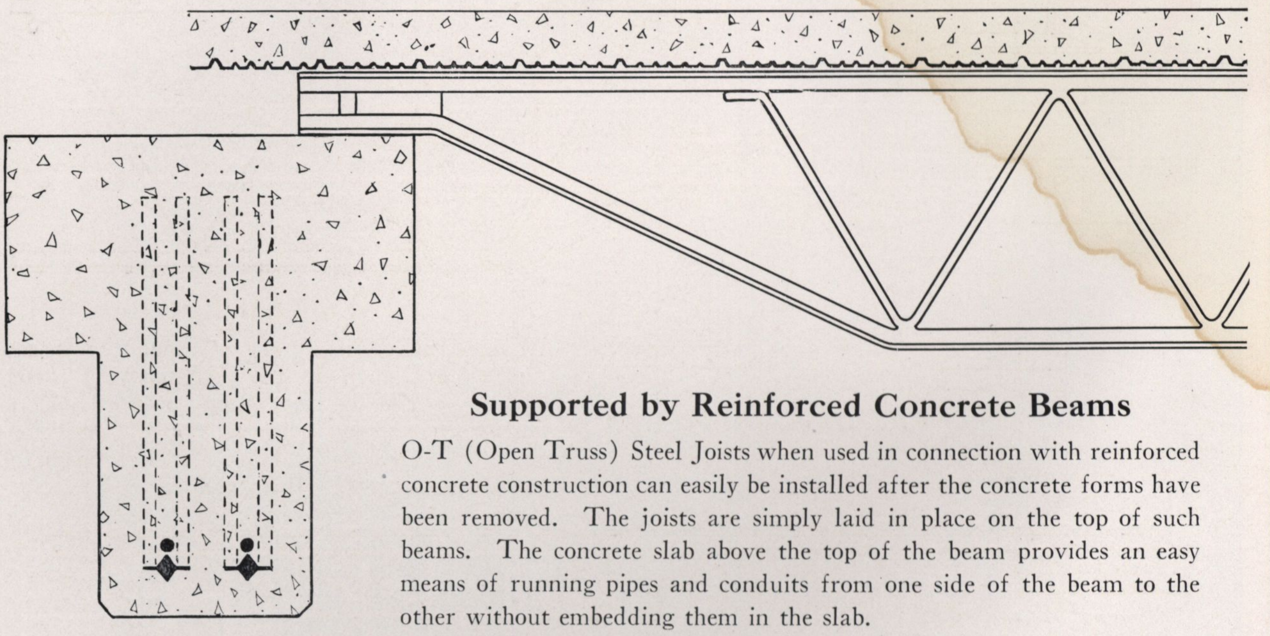
SECTION NUMBER	C	D	E	F	AREA	RADIUS GYRATION
400	1⅞	5/32	½	.2196	.5714	.184
401	2¼	7/32	½	.2234	.777	.193
403	2½	¼	¾	.3000	1.038	.2682

DESIGNTION OF JOIST - First one or two numbers of "Type" indicate depth of joist. Next number the section of top chord Last number of bottom chord. Example - 1433 indicates joist 14" deep - 403 top chord & 403 bottom chord.

TABLE OF STANDARD INTERIOR & EXTERIOR PANEL LENGTHS

Type	Depth	"X"	Exterior panel lengths are made in the following variable lengths "Y."						Top Chord	Bottom Chord	Web.
800	8"	9⅛	1-2	1-3½	1-5				400	400	7/16 φ
1000	10"	11½	1-4¼	1-5¾	1-7¼	1-8¾			400	400	½ φ
1011	10"	11½	1-4¼	1-5¾	1-7¼	1-8¾			401	401	½ φ
1200	12"	13¾	1-6½	1-8	1-9½	1-11	2-0½		400	400	½ φ
1211	12"	13¾	1-6½	1-8	1-9½	1-11	2-0½		401	401	9/16 φ
1411	14"	15¾	1-7½	1-9	1-10½	2-0	2-1½		401	401	⅝ φ
1433	14"	15⅜	1-8½	1-10	1-11½	2-1	2-2½		403	403	11/16 φ
1611	16"	18	1-10	1-11½	2-1	2-2½	2-4	2-5½	401	401	11/16 φ
1633	16"	17⅝	1-10½	2-0	2-1½	2-3	2-4½	2-6	403	403	¾ φ

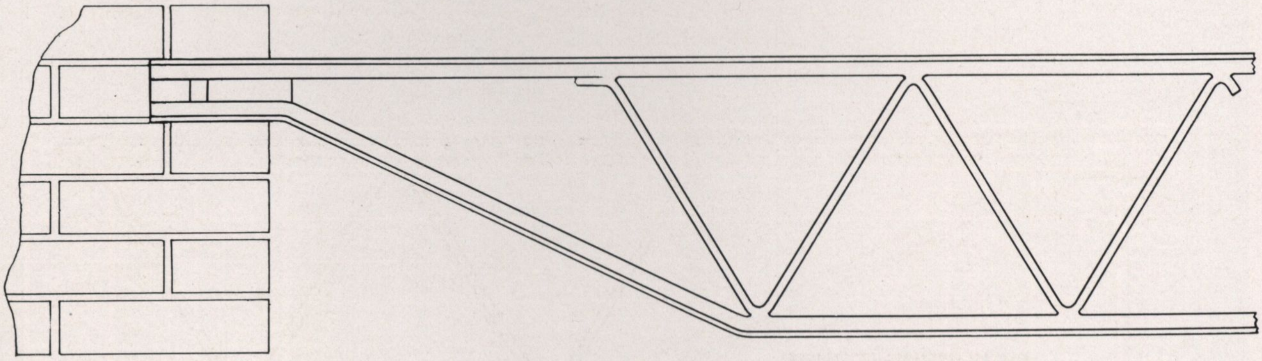
Construction Details



Supported by Reinforced Concrete Beams

O-T (Open Truss) Steel Joists when used in connection with reinforced concrete construction can easily be installed after the concrete forms have been removed. The joists are simply laid in place on the top of such beams. The concrete slab above the top of the beam provides an easy means of running pipes and conduits from one side of the beam to the other without embedding them in the slab.

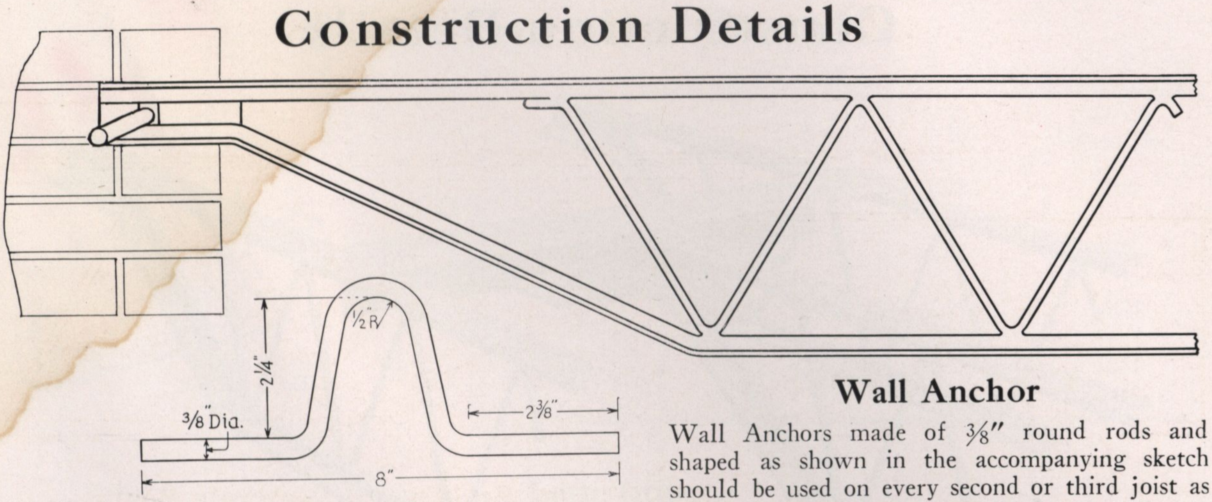
This method of placing O-T (Open Truss) Steel Joists on concrete beams eliminates the necessity of framing the joists and saves considerable in form-work. Since the center of gravity of these joists is at a point which is lower than the point of bearing, they do not have a tendency to overturn.



Supported on Masonry

Care should be taken to slush the opening around the ends of the joists with a rich mortar in order to provide proper bond between the joists and the supporting members, and thereby make the entire construction more rigid. Joists bearing of 2½″ in depth make embedding in brick work simple and economical.

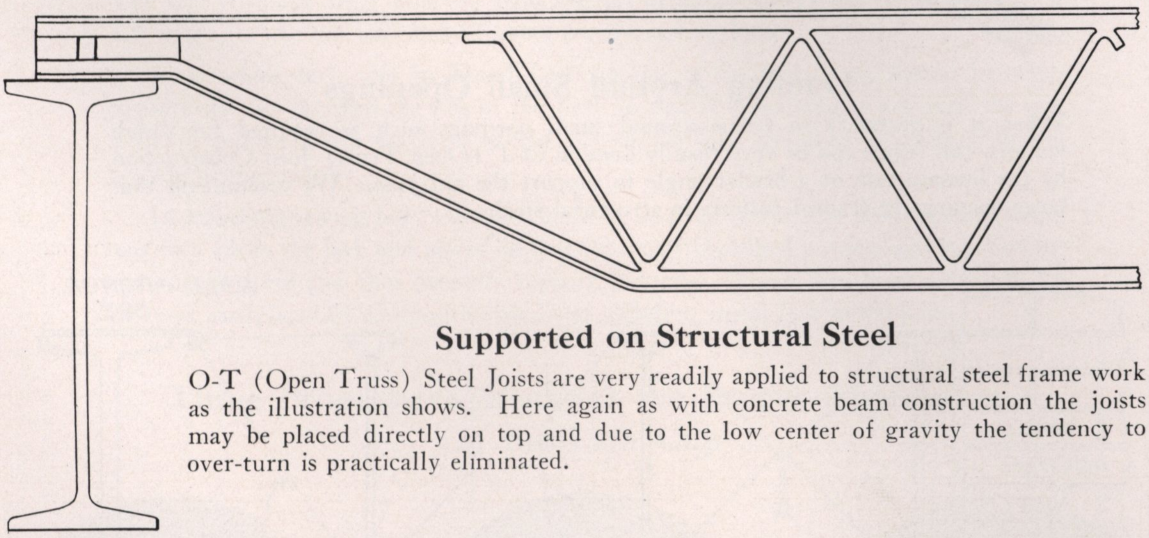
Construction Details



WALL ANCHOR NO. 5

Wall Anchor

Wall Anchors made of ⅜" round rods and shaped as shown in the accompanying sketch should be used on every second or third joist as an additional bond between floor and wall construction when the wall is of such a height or nature as not to be self-sustaining.



Supported on Structural Steel

O-T (Open Truss) Steel Joists are very readily applied to structural steel frame work as the illustration shows. Here again as with concrete beam construction the joists may be placed directly on top and due to the low center of gravity the tendency to over-turn is practically eliminated.

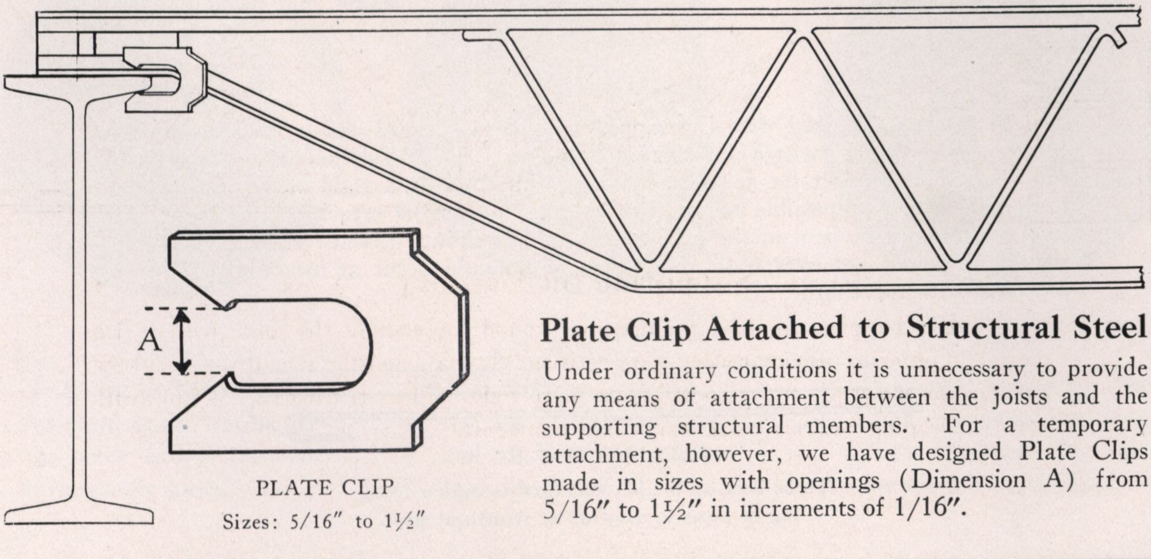
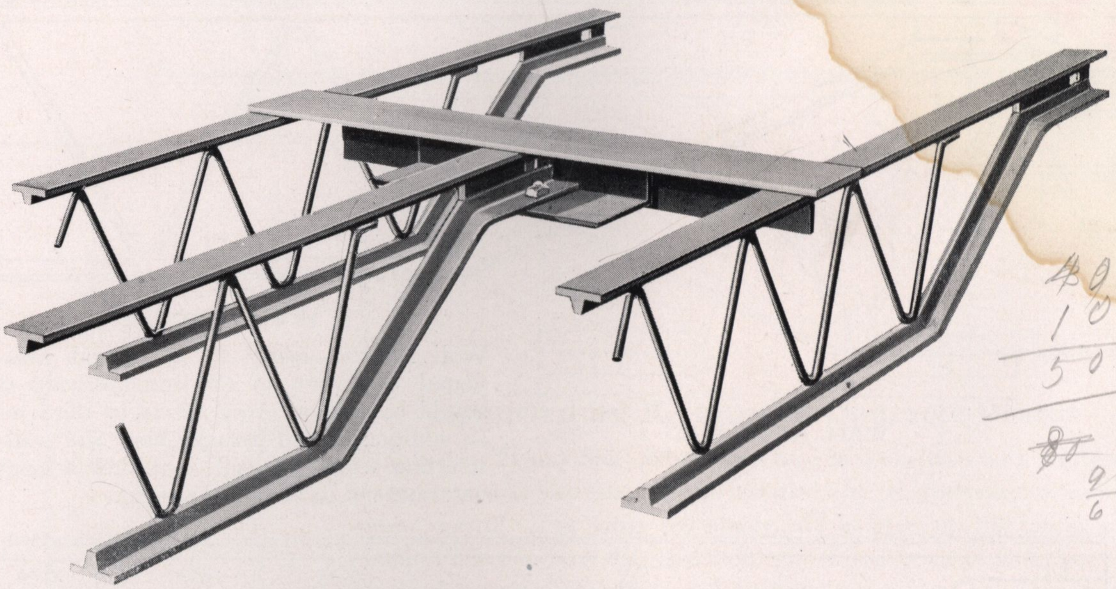


PLATE CLIP
Sizes: 5/16" to 1½"

Plate Clip Attached to Structural Steel

Under ordinary conditions it is unnecessary to provide any means of attachment between the joists and the supporting structural members. For a temporary attachment, however, we have designed Plate Clips made in sizes with openings (Dimension A) from 5/16" to 1½" in increments of 1/16".

Construction Details

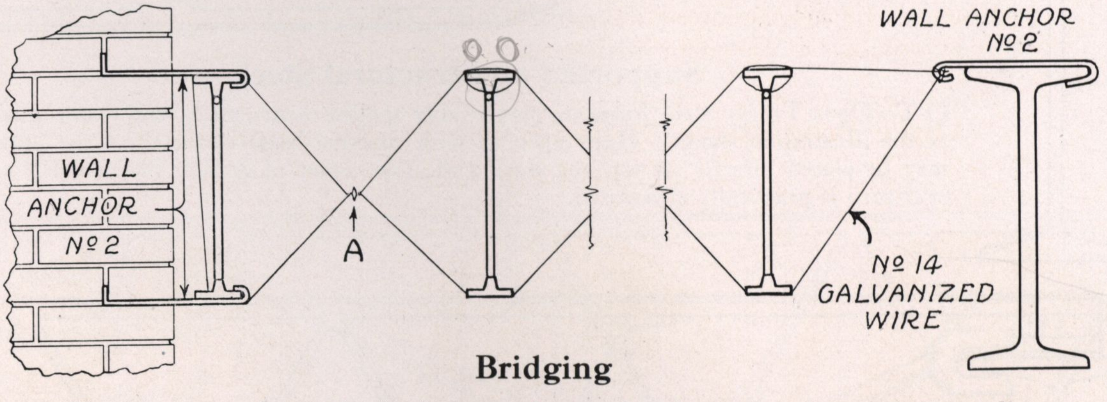


40
10
50
~~80~~
90
60

50—
~~7500~~
78.00

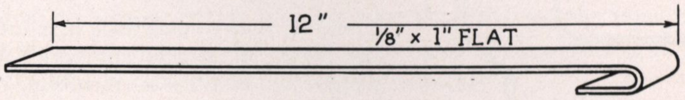
Framing Around Small Openings

When it is necessary to frame around small openings such as required for dumb waiters, this frame can be very readily done in O-T (Open Truss) Joist Construction by the introduction of a header angle to support the tail joist. We recommend that large openings be framed entirely in structural steel.



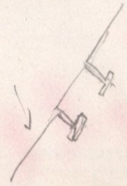
Bridging

No. 14 gauge galvanized wire is wrapped around each chord and crossed diagonally between joists being twisted for tension at points "A". Wall anchors, if specified, can be used to connect the joists to masonry, thus making a rigid anchorage for the bridging. When impossible to tie the bridging to parallel structural members, the wall anchor may be bent in the field to function as shown. Note: Lines of bridging should be spaced not over 6′-0″ on centers and should occur at intersection of web members with top chord.

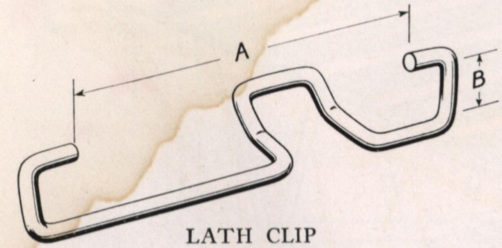


WALL ANCHOR NO. 2

To be bent on the job and used to anchor bridging or joists to masonry or structural steel.



Construction Details



LATH CLIP

Clip No.	A	B	Used On Section No.
1	1-11/16″	5/16″	400
2	2- 1/16″	⅜″	401
3	2- 5/16″	7/16″	403
4	2- 9/16″	½″	404

Lath Clip

THE clips used in attaching Metal Lath to the Truscon O-T (Open Truss) Steel Joist are made of No. 11 gauge wire in dimensions as listed in the accompanying table. The lath clips are easily attached with the aid of any ordinary pair of pliers; spaced 12″ apart for the top lath and 8″ apart for the ceiling lath.

In attaching lath clips to Metal Lath on top of the joists, care should be taken to place the clip between the ribs of the Lath so that if wood screeds are used, the clip will not project above the level of the ribs of the lath and thus interfere with the placing of the screeds.

In attaching ceiling lath, the clip should be inserted in the first mesh opening adjacent to a rib in the lath and placed so that the small U-shaped portion will lay directly underneath a rib and thus properly support the lath. These clips have proven to be the most easily applied and positive means of attaching metal lath to the joists.

Three Progressive Steps for the Proper Application of the Lath Clip

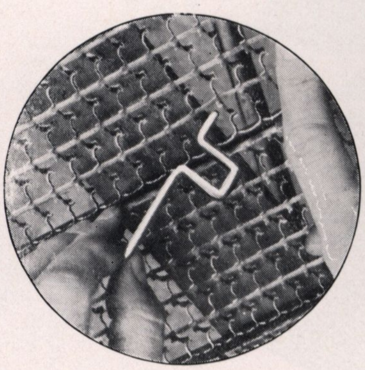


FIG. 1

The clip is held by the long end in the left hand; the short end is inserted through the mesh.

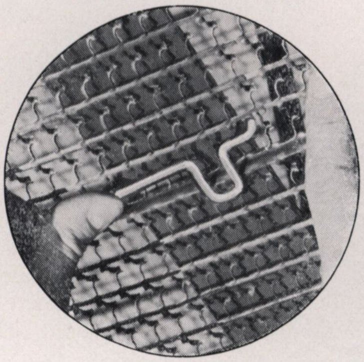


FIG. 2

Inserting the long end of the clip through the mesh and held in this position with the thumb.

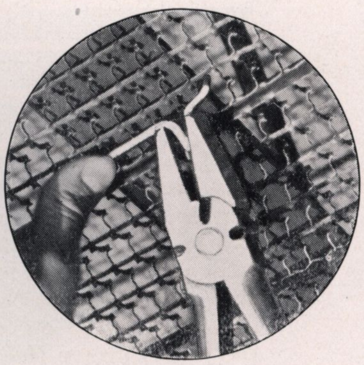
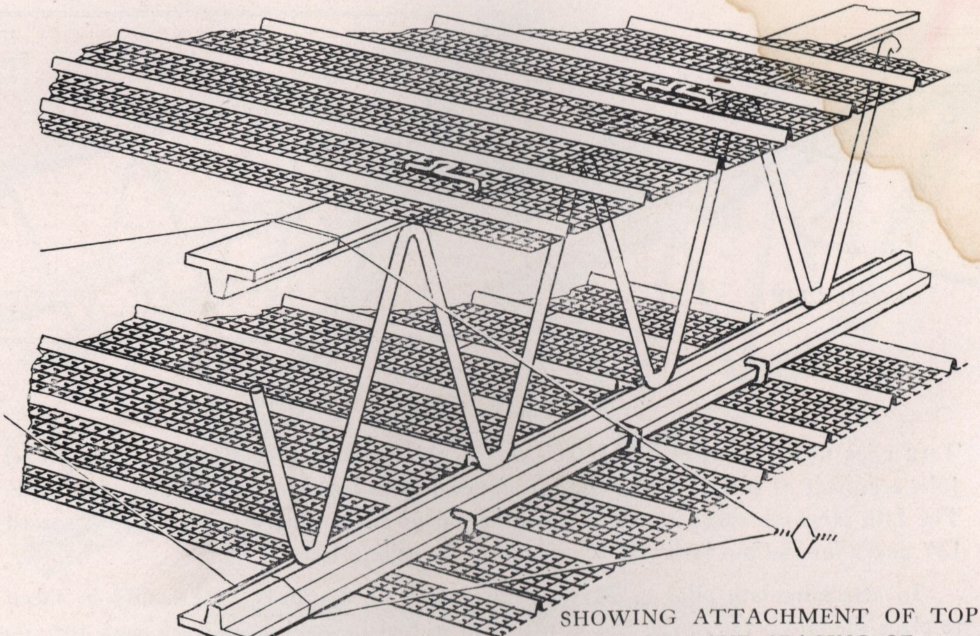


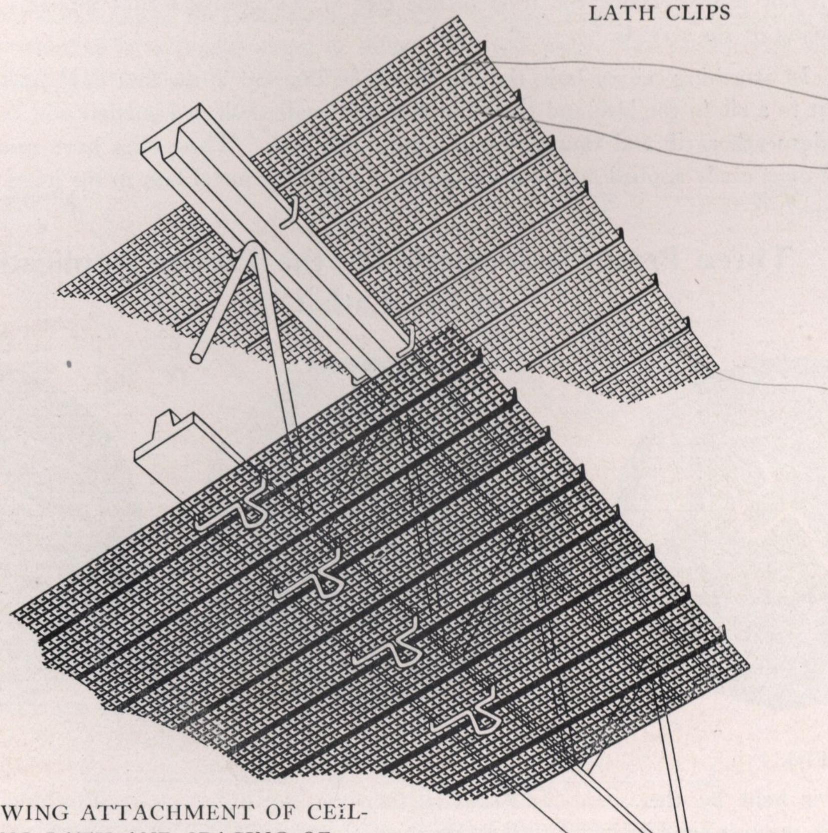
FIG. 3

Pinching together the small U-shaped portion of the clip which lays under the rib of the lath.

Construction Details

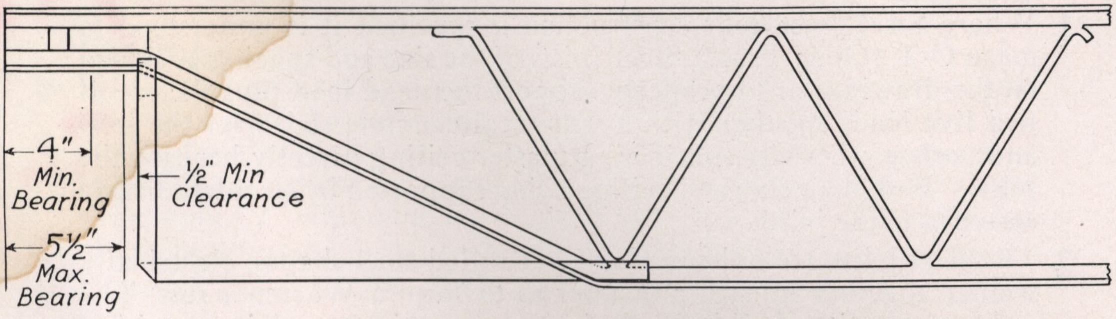


SHOWING ATTACHMENT OF TOP LATH AND SPACING OF LATH CLIPS



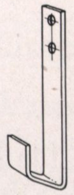
SHOWING ATTACHMENT OF CEILING LATH AND SPACING OF LATH CLIPS

Construction Details

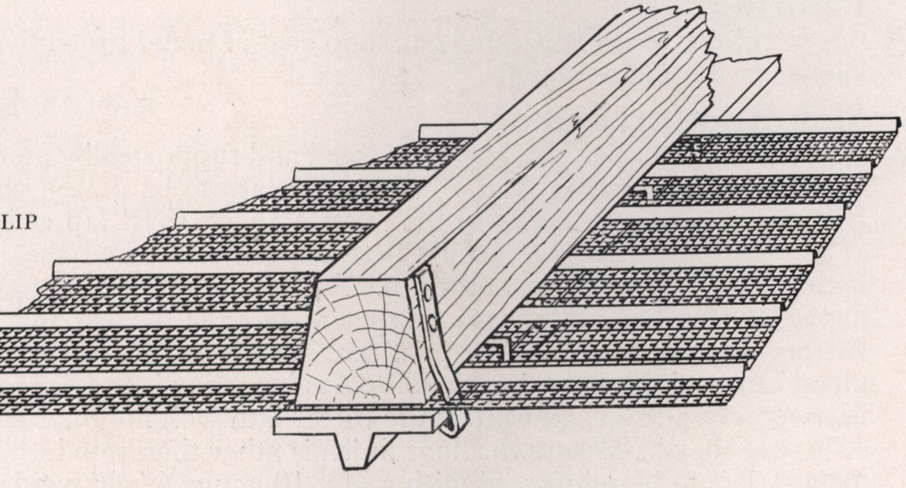


Bottom Chord Extension for Attachment of Ceiling Lath at Ends of Joists

When O-T (Open Truss) Joists have plastered ceilings attached directly to the underside, it is necessary to provide an extension to the bottom corner from the first panel point to the face of the members supporting the joists. Detachable bottom chords are provided for this purpose and are readily applied after the joists have been completely installed. Pipes of considerable lengths can thus be installed adjacent to the wall or bearing member without any interference and this bottom chord extension later slipped into place. Two slots are provided in each end of each joist (one at each bend) and the bottom chord extension is slipped through the lower slot and hung in the upper one. After hooking the bottom chord extension in the upper slot it can be securely locked in position by simply pinching together with a pair of pliers.



SCREED CLIP



Attachment of Screeds

When wood finished floors are used in connection with Steel Joist construction, it is necessary that a nailing screed be provided. We recommend a bevelled screed as shown in the accompanying illustration. It is placed parallel to, and directly above the joist, thus, thoroughly embedding it in concrete and providing a maximum fire-proofing. Screeds are held in place by means of screed clips which should be staggered and spaced about 16″ apart.

Specifications

General

1 Where Steel Joist floor construction is specified it is understood to mean O-T (Open Truss) Steel Joists of the size and spacing as shown on the drawings or to properly support the dead load plus the specified live load, together with a structural concrete slab over the joist and, unless otherwise specified, a plaster ceiling directly beneath the joists. Both floor slab and ceiling being supported by steel lath firmly attached to the joists.

2 The steel joists are to be made of hot-rolled steel shapes, electrically welded together in such a manner as to form a Warren Truss. The web construction shall be made from one continuous plain round bar for each joist, bent cold in such a manner as to form the web members. The top and bottom chord members shall be hot-rolled T shape sections. The top chord shall be straight and continuous throughout the entire length and the bottom chord shall be bent up at the ends to form the bearings.

Design

3 The O-T (Open Truss) Steel Joists shall be of a Warren Truss design and all members shall be of sufficient size to carry their respective stresses based upon (Truscon Standard) (American Institute of Steel Construction) specifications and loading tables.

Spacing

4 The spacing of joists shall not exceed 24″ for floor construction or 30″ for roofs.

Painting

5 All steel joists shall be painted one shop coat of metal protective paint known as Bar Ox or equal.

Slab Reinforcement

6 The top concrete slab shall be reinforced and supported by metal lath with 3/8″ ribs not more than 4″ apart, the lath to be placed with the ribs up and at right angles to the joists. Sheets shall lap at least 2″ at the end where the lap occurs between the joists, and the ends of both sheets shall be wired at the lap. Attach the lath firmly to the top flange of the joists by means of special wire lath clips spaced not further apart than 12″. For joist spacing up to 19″ on centers, use metal lath weighing not less than 3½ lbs. per sq. yd. and for spacings between 19″ and 24″ on centers use metal lath weighing not less than 4 lbs. per sq. yd. Where the floor finish is other than wood, the structural slab is to be reinforced with a No. 10 gauge 6″x6″ welded steel fabric.

Bridging

7 Steel Joist shall be bridged at intervals of not over 6′-0″ with one row of bridging not more than 3′-0″ from each end. The bridging shall consist of No. 14 galvanized wire in two lines, each line to be wrapped around the top chord of one joist and then around the bottom chord of the next joist and so on throughout the entire panel, the wires to be

drawn tight by twisting where they cross between the joist, each end of each line of bridging to be anchored securely to the wall by means of wall anchors or to structural steel member which runs parallel to the joist at each end of the panel.

Ceilings

8 Where plastered ceilings are attached directly to the joists, metal lath conforming to the following weights for various spacings shall be attached with the ribs up and at right angles to the joists by means of lath clips spaced not more than 8″ on centers. The ends of the sheets to be lapped 2″ where the lap occurs at the joists and 4″ where the lap occurs between the joists; both ends of sheets to be securely wired.

9 Joists spacing up to 19″—Flat rib lath weighing not less than 3.2 lbs. per sq. yd. or ⅜″ rib lath weighing 3 lbs. per sq. yd.

10 Joists spacing over 19″ and less than 24″ on centers, ⅜″ rib lath weighing 3½ lbs. per sq. yd. and for joist spacing up to 30″ on centers, ⅜″ rib lath weighing 4 lbs. per square yard.

Bearings

11 Joists shall have a minimum bearing of 4″ on concrete or masonry and 2½″ on steel.

Floor Slab

12 When the floor finish is cement, tile, or similar materials the structural slab shall be continuous and not less than 2″ in thickness of 1:2:4 stone concrete.

13 This concrete shall be what is known as a dry mix and if buggies or barrows are used for distribution, planks shall be placed across the top of the joists for runways and the concrete shall not be dumped between the joists but shall be dumped over the top of a joist so as to prevent unnecessary sagging of the metal lath.

Wood Floors

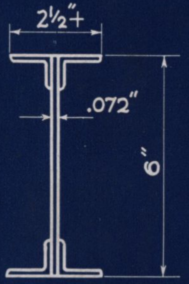
14 Where wood floors are specified 2″x2″ beveled wood screeds shall be laid on top of the lath, parallel and directly over the centers of the joists and attached to the top chord of the joists by means of screed clips spaced not more than 16″ on centers and staggered on either side of screed. The space between the screeds shall be filled with concrete as specified under floor slabs.

15 Where single wood floors are specified the joist spacing shall not exceed 20″ on centers except where the wood screeds are laid at right angles to the joists, in which case these screeds shall be 1″x2″ and shall be blocked up above the lath about 1″ so as to allow 1″ of concrete under the screed and care should be taken in pouring the concrete to see that the space under the screed is completely filled. In cases where screeds are run at right angles to joists, they shall be spaced not over 20″ on centers.

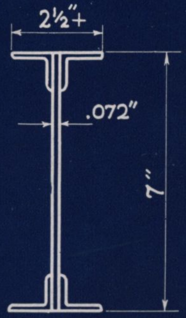
Plaster Ceilings

16 Plaster ceilings shall be not less than ¾″ in thickness and shall be of cement, hard wall or gypsum plaster.

TRUSCON
STEEL JOISTS
PLATE GIRDER TYPE



PG-62½



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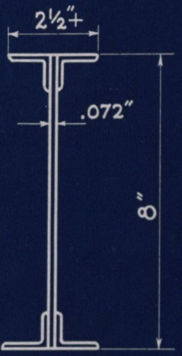

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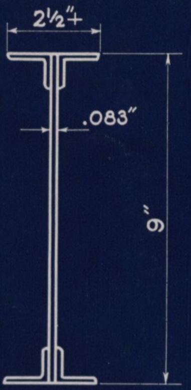
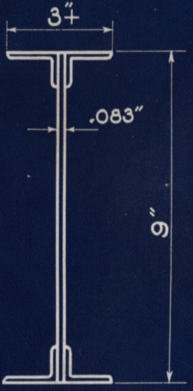
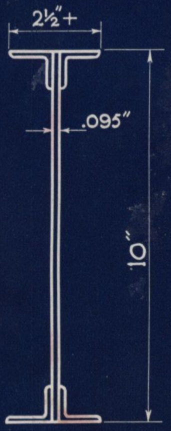


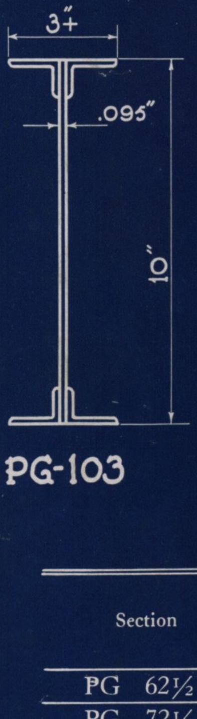
PG-92½



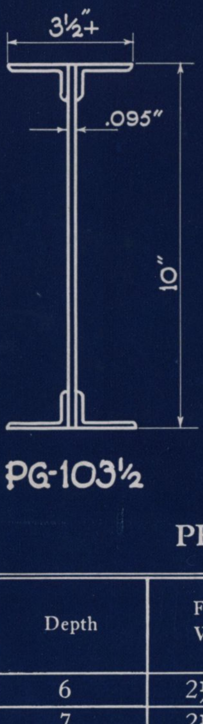
PG-93



PG-102½



PG-103



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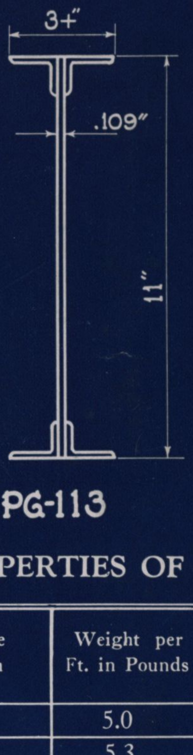
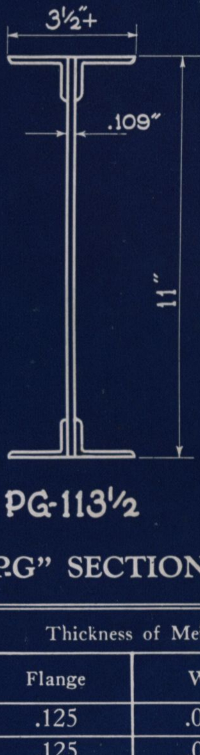
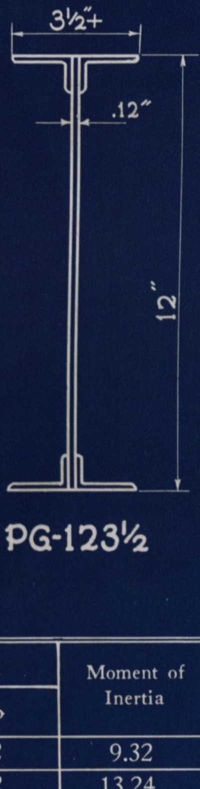


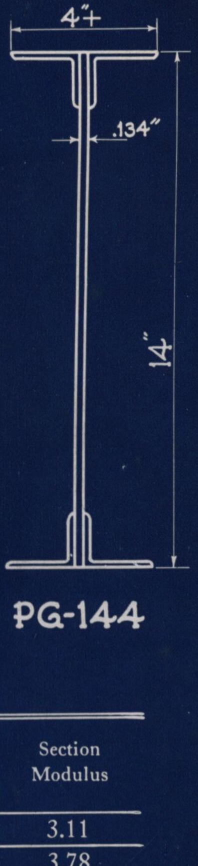
PG-113



PG-113½



PG-123½



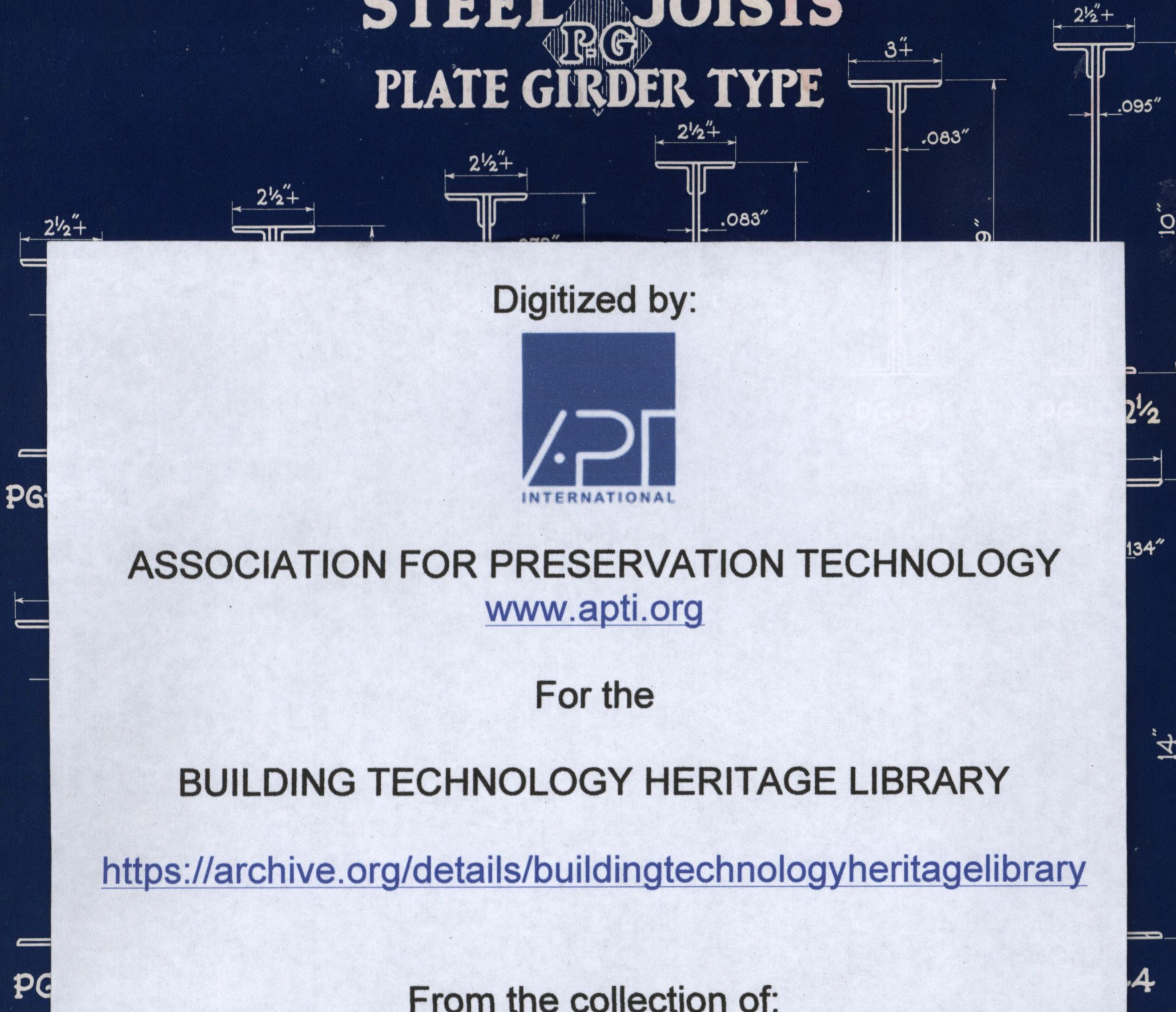
PG-144

PROPERTIES OF "P.G" SECTIONS

Section	Depth	Flange Width	Weight per Ft. in Pounds	Thickness of Metal		Moment of Inertia	Section Modulus
				Flange	Web		
PG 62½	6	2½+	5.0	.125	.072	9.32	3.11
PG 72½	7	2½+	5.3	.125	.072	13.24	3.78
PG 82½	8	2½+	5.6	.125	.072	17.95	4.49
PG 92½	9	2½+	6.1	.125	.083	24.15	5.37
PG 93	9	3+	6.5	.125	.083	26.59	5.91
PG 102½	10	2½+	6.8	.125	.095	31.78	6.36
PG 103	10	3+	7.2	.125	.095	34.81	6.96
PG 103½	10	3½+	7.6	.125	.095	37.88	7.58
PG 113	11	3+	8.1	.125	.109	44.92	8.17
PG 113½	11	3½+	8.5	.125	.109	48.64	8.84
PG 123½	12	3½+	9.3	.125	.120	61.08	10.18
PG 144	14	4+	12.0	.125	.134	104.52	14.93

No. 25-602-2500-2-28

TRUSCON
STEEL JOISTS
PG
PLATE GIRDER TYPE



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PG 102½	10	2½+	6.8	.125	.095	31.78	6.36
PG 103	10	3+	7.2	.125	.095	34.81	6.96
PG 103½	10	3½+	7.6	.125	.095	37.88	7.58
PG 113	11	3+	8.1	.125	.109	44.92	8.17
PG 113½	11	3½+	8.5	.125	.109	48.64	8.84
PG 123½	12	3½+	9.3	.125	.120	61.08	10.18
PG 144	14	4+	12.0	.125	.134	104.52	14.93

No. 25-602-2500-2-28